SCIENTIFIC NOTE

Eleodes obscurus (Coleoptera: Tenebrionidae): confirmation of a Canadian population and possible northward expansion from Washington State into British Columbia in the Okanagan Valley

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Eleodes is a western North American tenebrionid beetle genus of about 130 species, 14 of which are recorded in British Columbia (Bousquet and Campbell 1991). Most are restricted to BC's Southern Interior grasslands, where they are a distinctive component of the insect fauna. The large size and the defensive habit of many species (headstanding and releasing irritating quinone compounds (Tschinkel 1975)) make them conspicuous. The genus is often the subject of ecological and population studies in grasslands and desert ecosystems (e.g., Crist *et al.* 1992).

Eleodes obscurus (Say) ranges from southern BC south to northern Mexico and east to Texas, Kansas and Wyoming, with most of the range west of the Rocky Mountains occupied by the subspecies *E. obscurus sulcipennis* Mannerheim (Charles. A. Triplehorn, pers comm.; Blaisdell 1909). Triplehorn (pers. comm.) gives the distribution of *E. obscurus sulcipennis* as Arizona, Nevada, Washington, Oregon, California, Idaho, Montana, and Texas in the United States and Sonora, Chihuahua, Coahuila, and Durango in Mexico.

In Canada, *E. obscurus* is recorded only from British Columbia (Bousquet and Campbell 1991). There are reports from the Okanagan in 1912 and 1913 (Brittain 1913, 1914); the only locality noted is Larkin in the North Okanagan (Brittain 1914). Apparently, these are the BC records cited by Boddy (1965), but it is not known if the identifications are accurate or if the specimens exist in any collection. No Canadian collections that we checked (Canadian National Collection of Insects, Ottawa; Pacific Forestry Centre, Victoria; Royal British Columbia Museum, Victoria; Spencer Entomological Museum, Vancouver) contain BC material collected earlier than our own specimens discussed herein. Charles Triplehorn (pers. comm.) has no Canadian records in his extensive data.

As part of a large study by Scudder (2000) on the biodiversity of terrestrial arthropods of the Antelope-brush steppe in the South Okanagan Valley, Latham (1995) reported on the distribution of tenebrionid beetles that Scudder collected in 1994 and 1995. Pitfall traps set at ten sites ranging from the east side of Osoyoos Lake, Oroville, WA, in the south (48°58'N 119°25'W) to the south end of Vaseux Lake, BC, in the north (49°16'N 119°30'W) collected nine species of tenebrionid beetles, including six of *Eleodes*. *Eleodes obscurus* was collected only at the Washington State site, which is about a kilometre south of the International Boundary and it was recorded in all months between May and September. The species has been common and widespread in eastern Washington for many years (Rogers *et al.* 1978).

Although we collected extensively around Osoyoos Lake in the 1970s and 1980s, we never found *E. obscurus*. Scudder did not collect a single specimen at the Haynes Ecological Reserve (north end of Osoyoos Lake), which he monitored by monthly pitfall trapping from 1991 to 2008. However, about 20 km to the southeast, near his home in Osoyoos, he ran traps in remnants of Antelope-brush steppe; ten specimens came from these collections (1992-

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1996). In addition, starting in 1990, he and his wife hand-collected specimens around their garden, recording 14 specimens up to 2008; ten of these were from 2004 and later.

All this suggests that although *E. obscurus* has been widespread in the dry grasslands of Washington State for decades, it has been absent or rare in the adjacent Okanagan Valley in Canada. A couple of historic records from 1912-13, when the species was reported as a possible agricultural pest, are unverified and possibly represent misidentifications, given that there are several large *Eleodes* species and other similar tenebrionids in the region. *Eleodes obscurus*, with its large size and striking defensive behaviour, is readily recorded when it is present. The notable increase in records since 1990 around Osoyoos, BC, immediately north of the International Boundary, indicates that the beetle's range may be expanding northward. Future records from grasslands to the north of Osoyoos Lake will confirm this observation.

Material examined. Collections housing material are abbreviated thus: CNCI (Canadian National Collection of Insects, Agriculture and Agrifood Canada, Ottawa, ON), GGES (G.G.E. Scudder Collection, Vancouver, BC), RBCM (Royal British Columbia Museum, Victoria, BC), UBC (Spencer Entomological Museum, University of British Columbia, Vancouver, BC)

CANADA: BRITISH COLUMBIA: Osoyoos, East Bench, 49°1'31.88"N x 119°25'12.43"W, *Purshia* association, pitfall trap, 20.iv.-11.vi.1992 (1), 11.vi-3.vii.1992 (3), 9.v-17.vi.1993 (1), 5.viii-12.ix.1994 (1), 8.v-13.vi.1996 (1), 13.vii-16.viii.1996 (2), G.G.E. Scudder (UBC); 13.vii-16.viii.1996 (1) G.G.E. Scudder (RBCM). Osoyoos, East Bench, 49°1'34.00"N x 119°25'15.00"W, hand collected in garden, 12.vi.1990(1), G.G.E. Scudder (UBC); 30.vi.1991 (1), 20.vi. 2001 (1), J. Scudder (UBC); 25.v.2002 (1) G.G.E. Scudder (UBC); 25.v.2002 (1), G.G.E. Scudder (UBC); 24.v.2004 (1), R.R. Stubbs (CNCI), 1.vii.2004 (2), 8.vii.2004 (1), G.G.E. Scudder (CNCI); 14.v.2005 (1), 27.v.2005 (1), 28.v.2005 (1), 27.vi.2005(1), G.G.E. Scudder (UBC); 27.v.2008 (1), J. Scudder (CNCI); 12.vi.2009 (1), 17.vi.2009 (1), G.G.E. Scudder (RBCM); SOCAP site 7 (H90-73) [unknown South Okanagan site], 9.v.1990, H. Knight (RBCM).

USA: WASHINGTON: Oroville, E Osoyoos Lake, 48°58'N x 119°25'W, *Purshia* association; AN, BGxh1, pitfall trap, all collected G.G.E. Scudder. 5.v-30.v.2004 (1, GGES; 4, UBC); 30.v.-5.vii.1994 (6, RBCM; 4, UBC); 5.vii.-2.viii.1994 (4, CNC; 3, UBC); 2.viii.-6.ix.2004 (11, UBC); 6.ix-6.x.1994 (2, UBC); 4.v.-7.vi.2005 (3, UBC);7.vi-9.vii.1995 (2, UBC); 7.vii-9viii.1995 (6, UBC).

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